

**REMARKS**

Claims 1-6, 8-9, and 12 currently appear in this application. The Office Action of October 7, 2002, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed.

Applicants respectfully request favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

**Rejections under 35 U.S.C. 112**

Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As the present amendment cancels claims 10 and 11, this rejection is now moot.

**Art Rejections**

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. Sato et al. are said to teach the use of compounds embraced by formula (I), where the benzene nuclei may be condensed with one or more benzene rings or may be substituted by various moieties. The Examiner's position is that it would be obvious to modify compounds 6 or 16 by using benzoindole moieties such as those shown in compounds 5 and 19 as the terminal moieties with a reasonable expectation of forming a dye useful in optical recording with similar

spectral characteristics, solubility, and stability to that of compounds 6 or 16 or to replace the heptamethine chain of compounds 5 and 10 with pentamethine chains based upon the disclosure of n being equal to 2 or 3.

This rejection is respectfully traversed. Claim 1, and therefore the claims dependent upon claim 1, has been amended to distinguish the claimed cyanine dye from the cyanine disclosed in Sato et al. In claim 1, R<sub>3</sub> is now defined as "halogen", and X<sup>-</sup> is defined as an inorganic ion containing fluorine and either phosphorus or antimony. Support for this amendment can be found in the specification as filed at page 5, lines 9-2 from the bottom, and Chemical Formulae 1 to 12 on pages 9-12.

Compounds 6 and 16 of Sato et al. differ from the herein claimed cyanine dye in the following ways:

1. compounds 6 and 16 have different rings condensed with the indolenine skeleton from that of the present invention;

2. compounds 6 and 16 have no halogen substituent in the straight methine chain.

Compounds 5 and 10 of Sato et al. differ from the herein claimed cyanine dye in the following ways:

1. compounds 5 and 10 have different length methine chains from the claimed cyanine dye; and

2. compounds 5 and 10 have no halogen

substituent in the methine straight chain.

It is respectfully submitted that it would not have been obvious for even a skilled artisan to modify compounds 6 or 16, or compounds 5 or 10, to obtain the structure of the cyanine dye as claimed herein with a reasonable expectation of forming a dye useful in optical recording. The differences in structure between the claimed compounds and the Sato et al. compounds are too great to enable one reasonably to expect the compounds to have the same properties.

Furthermore, the cyanine dyes as disclosed in Sato et al. already have the expected properties. Thus, there is no motivation to modify the cyanine dyes disclosed therein.

Sato et al. provide no experimental data regarding solubility of the dyes disclosed therein. The only reference to solubility is the Abstract, which states that the compound provides high solubility in alcoholic solvents. There is nothing in Sato et al. that would motivate one skilled in the art to modify the compounds disclosed in Sato et al. to obtain a cyanine dye having a similar solubility. Sato et al. provide no guidance regarding what moieties on the compounds provide solubility characteristics of the cyanine dyes disclosed therein.

In contrast to Sato et al., the present specification provides experimental data showing the solubility of the claimed dyes (see Table 2 on page 30). The claimed dyes have been demonstrated to have desirable solubility.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being obvious over either Inagaki et al. or Maeda et al. or Morishima et al. in view of Sato et al.

This rejection is respectfully traversed. The compounds disclosed in Inagaki et al. have the same substituents at positions  $R_1$  and  $R_2$  of formula 1 of the claimed invention. That is, Inagaki et al. merely disclose control compounds of the present invention, such as Chemical formulae 17-20 of the present specification.

As is shown in Table 2 on page 30 of the present specification, the cyanine dyes having the Inagaki et al. substituents at positions  $R_1$  and  $R_2$  of Formula 1 of the herein claimed invention I, i.e., Chemical Formulae 17-20. These compounds were much less soluble than the cyanine dyes claimed herein, i.e., Chemical Formulae 10-12, which have different substituents from Inagaki et al. at the  $R_1$  and  $R_2$  positions.

Thus, it is respectfully submitted that Inagaki

et al. provide no teaching regarding the herein claimed invention.

Maeda et al. merely disclose a dye-incorporated composition which comprises a cyanine type dye and azo metal chelate compound. Maeda does not disclose any of the herein claimed cyanine dyes, and thus adds nothing to Inagaki et al. to render the present claims unpatentable. The closest compound in Maeda et al. to the claimed compounds is Example 8. However, in this compound, the anion is different from that of the present invention, and the compound has no halogen substituent in the straight methine chain.

Similarly, Morishima et al. do not disclose the claimed cyanine dye at all. While compound B-28 at column 29 of Morishima et al. appears to be the closest compound, the anion is different from that of the claimed cyanine dye, and the compound has no halogen substituent in the straight methine chain. There is nothing in Morishima et al., either alone or taken in combination with Sato et al. that suggests the presently claimed invention.

The Examiner's position is that it would have been obvious to one skilled in the art to modify the symmetric pentamethine benzoindolenic dye having a PF6<sup>-</sup> anion as the counterion within the teaching of either

Inagaki et al., Maeda et al., or Morishima et al. by using different N-substituents on the benzoindolenic moieties based upon the teachings of Sato et al. with a reasonable expectation of achieving increases in solubility, stability, and the like, as this is attributed to the asymmetry in the N-substituents.

In response to this assertion, it should be noted that Sato et al. disclose no experimental data regarding solubility of the compounds disclosed therein. Sato et al. merely state in the abstract that the compound provides high solubility in alcoholic solvents. There is no indication of what this "high solubility" means. Therefore, it would have been difficult for one skilled in the art to modify the symmetric pentamethine benzoindolenic dye of either Inagaki et al., Maeda et al., or Morishima et al. by using different N-substituents with a reasonable expectation of increasing the solubility of the compounds.

There is also no motivation to combine Inagaki et al or Maeda et al. or Morishima et al. with Sato et al, because the compounds disclosed in the cited references one would assume are the most preferable compounds in view of their properties. Therefore, there is no reason to combine any of Inagaki et al., Maeda et al., or Morishima et al. with Sato et al.

As the Federal Circuit stated in *In re Lee*, 61 USPQ2d 1430 (January 18, 2002, Fed. Cir.), "As applied to the determination of patentability *vel non*, when the issue is obviousness, 'it is fundamental that rejections under 35 U.S.C. 103 must be based on evidence comprehended by the language of that section.' *In re Grasselli*, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000)... When patentability turns on the question of obviousness, the search for an analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness *See, e.g., McGinley v. Franklin Sports, Inc.*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ('the central question is whether there is a reason to combine [the] references,' a question of fact drawing on the *Graham* factors."

'The factual inquiry whether to combine references must be thorough and searching.' *Id.* This precedent has been reinforced in myriad decisions, and cannot be dispensed with, *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). ('a showing of a suggestion, teaching, or motivation to combine the prior art . references is an "essential component of an obviousness holding"'') (quoting *C. R. Bard, Inc. v. M3 Systems, Inc.*

48 USPQ2d (Fed. Cir. 1998)) The Court went on to quote *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999), "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."

There is a requirement for specificity in combining references, *See, In re Kotzab*, 55 USPQ2d 13134, 1317 (Fed. Cir. 2002) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.").

In the present case, the Examiner has shown no motivation to combine the cited references to arrive at the particular invention claimed herein.

Claims 1-9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yashito et al. in view of Inagaki et al. and/or Sato et al. Yashiro et al. are said to teach asymmetric pentamethine dyes with perchlorate counterions.

This rejection is respectfully traversed. The compounds of Yashiro et al. are different from the claimed cyanine dyes in that the Yashiro et al. compounds lack a halogen substituent in the straight methine chain



as well as in the anion. As noted above, the compounds of Inagaki differ from the herein claimed compounds in the N-substituents and the lack of halogen substituent in the straight methine chain in Inagaki et al. Therefore, one would not achieve the dyes of the present invention by combining the teachings of Inagaki et al. with Yashiro et al.

Similarly, Sato et al. never disclose a cyanine dye having a halogen substituent in the straight methine chain. Again, combining these references would not lead one skilled in the art to the herein claimed compounds.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. further in view of either Borrer et al., Mee et al., Lee et al., GB 355693, and Hamer. The Examiner alleges that it would have been obvious to one skilled in the art to use old and well known synthesis processes for forming cyanine dyes to form the cyanine dyes of Sato et al. with a reasonable expectation of forming the desired compounds.

None of Borrer et al., Lee et al., Mee et al., GB 355693 nor Hamer teaches the claimed cyanine dyes in their disclosures of methods for making cyanine dyes. Just because the techniques for making cyanine dyes are old, one skilled in the art is not necessarily led to make the cyanine dyes of the present invention because

there is no motivation, based upon the cited references, to do so.

All of the method claims in the present application have been cancelled. Reading a method for making compounds does not lead one to make the specific compounds claimed herein, without some motivation to make these compounds. The Examiner has not shown any motivation in the cited art to make the particular compounds of the present invention.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Inagaki et al. or Maeda et al. or Morishima et al. as modified by Sato et al. and further in view of either Borrer et al., Mee et al., Lee et al., GB 355693 and Hamer.

This rejection is respectfully traversed. There are no longer any claims in the present application directed to making the compounds claimed herein. None of the references cited for methods of making cyanine dyes discloses or suggests the particular compounds claimed herein.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly

In're Appl. No. 09/720,554  
Confirmation No. 2522

solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.  
Attorneys for Applicant(s)

By



Anne M. Kornbau  
Registration No. 25,884

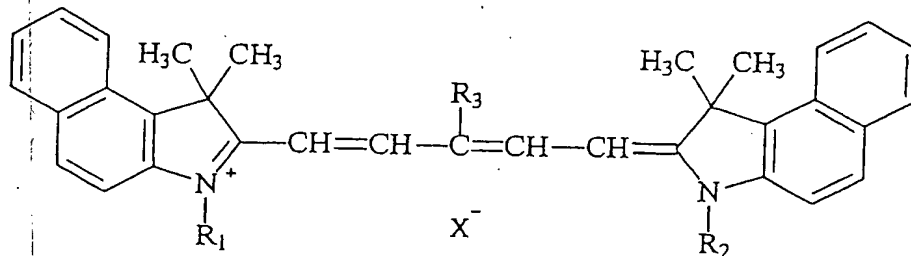
Telephone No.: (202) 628-5197  
Facsimile No.: (202) 737-3528  
AMK:nmp

G:\BN\S\SUMA\Hohsaka 2\PTO\mar 17 03 amend.doc

IN THE CLAIMS

Claim 1. (Currently amended) A cyanine dye  
represented by Formula 1:

Formula 1:



where in Formula 1, R<sub>1</sub> denotes a methyl or ethyl group; R<sub>2</sub> differs from R<sub>1</sub> and denotes a straight- or branched-chain alkyl group; R<sub>3</sub> is ~~hydrogen atom or a substituent selected from the group consisting of halogens and lower alkyl groups~~ halogen; X<sup>-</sup> denotes an ~~anion-excluding~~ BF<sub>4</sub>, inorganic ion containing fluorine ~~or an element of group 5a in the periodic table and either phosphorus or antimony~~.

Claim 2. (Original) The cyanine dye of claim 1, wherein said X<sup>-</sup> is a hexafluoro phosphoric acid ion or a hexafluoro antimononic acid ion.